

## Claims

We claim:

1. A memory medium comprising program instructions for specifying a  
5 signal analysis function, comprising:
  - receiving first user input indicating a parameter for a first operation, wherein the operation implements at least a portion of a signal analysis function;
  - programmatically including the first operation in a sweep loop;
  - receiving second user input specifying a sweep configuration for a sweep on the  
10 indicated parameter;
  - performing the sweep on the indicated parameter in accordance with the sweep configuration, thereby generating resultant data for the sweep; and
  - storing the resultant data for the sweep.
- 15 2. The memory medium of claim 1, wherein the program instructions are further executable to implement:
  - displaying the resultant data for the sweep on a display.
- 20 3. The memory medium of claim 2, wherein the program instructions are further executable to implement:
  - displaying a Graphical User Interface (GUI) on the display;
  - wherein said receiving first input and said receiving second input comprise receiving said first input and said receiving second input to the GUI; and
  - wherein said displaying the resultant data for the sweep on the display comprises  
25 displaying the resultant data for the sweep in the GUI.
4. The memory medium of claim 1, wherein the resultant data comprise signal data.

5. The memory medium of claim 4, wherein the signal data comprise a signal plot.

6. The memory medium of claim 4, wherein the signal data comprise tabular data.

7. The memory medium of claim 1, wherein said specifying a sweep configuration comprises specifying one or more of:

- a range of values for the indicated parameter;
- 10 a number of iterations for the sweep;
- an interpolation type;
- a step size for the sweep on the indicated parameter;
- one or more specific values in the range of values for the parameter; and
- a source for at least a portion of the sweep configuration.

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8. The memory medium of claim 1, wherein said specifying a sweep configuration comprises specifying the resultant data.

9. The memory medium of claim 1, wherein said performing the sweep on the indicated parameter in accordance with the sweep configuration comprises:

- providing a next sweep value of the parameter to the first operation as a current value of the parameter for the first operation;
- performing the first operation using the current sweep value of the parameter, thereby generating corresponding resultant data;
- 25 storing the corresponding resultant data; and
- repeating said providing a next sweep value, said performing the first operation using the current sweep value of the parameter, and said storing the corresponding resultant data in an iterative manner in accordance with the sweep configuration.

10. The memory medium of claim 9, wherein said performing the sweep on the indicated parameter in accordance with the sweep configuration further comprises:

batch computing each of the sweep values in accordance with the sweep configuration prior to said repeating.

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11. The memory medium of claim 9, wherein said providing a next sweep value of the parameter to the first operation as a current value of the parameter for the first operation

further comprises:

10 computing the next sweep value in accordance with the sweep configuration.

12. The memory medium of claim 1, wherein said performing the sweep on the indicated parameter in accordance with the sweep configuration comprises:

15 iteratively performing the first operation, wherein at each iteration the first operation is performed using a respective value of the parameter, and wherein at each iteration corresponding resultant data are generated.

13. The memory medium of claim 12,

20 wherein performing the first operation comprises performing the first operation using a hardware device, and wherein said iteratively performing the first operation comprises triggering the hardware device at each iteration.

14. The memory medium of claim 1,

25 wherein said receiving first user input indicating the parameter for the first operation further comprises receiving further first user input indicating one or more additional parameters for the first operation, wherein the parameter and the one or more additional parameters comprise a plurality of parameters;

wherein said receiving second user input specifying a sweep configuration for a sweep on the indicated parameter further comprises specifying the sweep configuration for a sweep on the indicated one or more additional parameters; and

wherein said performing the sweep on the indicated parameter in accordance with  
5 the sweep configuration further comprises performing the sweep on the indicated one or more additional parameters.

15. The memory medium of claim 14, wherein the sweep configuration specifies one or more of:

10 a parallel sweep of at least a first subset of the plurality of parameters; and  
a nested sweep of at least a second subset of the plurality of parameters.

16. The memory medium of claim 1, wherein the signal analysis function comprises a plurality of operations, wherein the program instructions are further  
15 executable to implement:

determining one or more other operations of the plurality of operations for inclusion in the sweep loop, wherein said performing the sweep on the indicated parameter further comprises performing the one or more other operations.

20 17. The memory medium of claim 16, wherein said determining the one or more other operations of the plurality of operations for inclusion in the sweep loop comprises:

receiving third user input indicating the one or more other operations of the plurality of operations for inclusion in the sweep loop; and

25 programmatically including the one or more other operations in the sweep loop.

18. The memory medium of claim 16, wherein said determining the one or more other operations of the plurality of operations for inclusion in the sweep loop comprises:

programmatically analyzing dependencies among prior operations and the first operation to determine the one or more other operations, wherein the first operation has a dependency on at least one of the one or more other operations; and

programmatically including the one or more other operations in the sweep loop.

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19. The memory medium of claim 1, wherein the program instructions are further executable to implement:

displaying a Graphical User Interface (GUI) on the display;

wherein said receiving first input and said receiving second input comprise

10 receiving said first input and said receiving second input to the GUI.

20. The memory medium of claim 19, wherein the GUI comprises a wizard, wherein said displaying the GUI comprises displaying a sequence of dialogs to interactively guide the user in specifying the sweep.

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21. The memory medium of claim 19, wherein the GUI comprises one or more configuration dialogs corresponding to the first operation.

22. The memory medium of claim 19, wherein the GUI further comprises a  
20 sweep configuration dialog corresponding to the sweep configuration, wherein the configuration dialog includes one or more GUI elements indicating the sweep configuration, wherein the program instructions are further executable to implement:

receiving third user input to the configuration dialog modifying the sweep configuration, thereby generating a modified sweep configuration, wherein said  
25 performing the sweep on the indicated parameter in accordance with the sweep configuration comprises performing the sweep on the indicated parameter in accordance with the modified sweep configuration.

23. The memory medium of claim 19, wherein the GUI is comprised in a signal analysis function development environment.

24. The memory medium of claim 23, wherein the signal analysis operation  
5 comprises a plurality of operations, including the first operation, wherein each of the plurality of operations corresponds to a respective function block, wherein the program instructions are further executable to implement:

displaying the corresponding function blocks for the plurality of operations in a diagram, wherein the diagram that visually represents I/O relationships between the  
10 function blocks.

25. The memory medium of claim 24, wherein the configured sweep corresponds to a sweep function block, wherein the program instructions are further executable to implement:

15 displaying the sweep function block in the diagram substantially indicating which of the corresponding function blocks are included in the sweep.

26. The memory medium of claim 24, wherein the program instructions are further executable to implement:

20 graphically indicating in the diagram which of the corresponding function blocks are included in the sweep.

27. The memory medium of claim 24, wherein the program instructions are further executable to implement:

25 storing information specifying the plurality of operations, wherein the information specifying the plurality of operations is executable in the signal analysis function development environment to perform the signal analysis function.

28. The memory medium of claim 27, wherein the program instructions are further executable to implement:

programmatically generating a graphical program implementing the signal analysis function based on the stored information, wherein the graphical program is  
5 executable to perform the signal analysis function.

29. A method for specifying a signal analysis function, comprising:

receiving first user input indicating a parameter for a first operation, wherein the operation implements at least a portion of a signal analysis function;

10 programmatically including the first operation in a sweep loop;

receiving second user input specifying a sweep configuration for a sweep on the indicated parameter;

performing the sweep on the indicated parameter in accordance with the sweep configuration, thereby generating resultant data for the sweep; and

15 storing the resultant data for the sweep.

30. A system for displaying signals, comprising:

a processor; and

a memory coupled to the processor, wherein the memory stores program  
20 instructions for specifying a signal analysis function, wherein the program instructions are executable by a processor to:

receive first user input indicating a parameter for a first operation, wherein the operation implements at least a portion of a signal analysis function;

programmatically include the first operation in a sweep loop;

25 receive second user input specifying a sweep configuration for a sweep on the indicated parameter;

perform the sweep on the indicated parameter in accordance with the sweep configuration, thereby generating resultant data for the sweep; and

store the resultant data for the sweep.

31. A system for displaying signals, comprising:  
means for receiving first user input indicating a parameter for a first operation,  
wherein the operation implements at least a portion of a signal analysis function;  
5 means for programmatically including the first operation in a sweep loop;  
means for receiving second user input specifying a sweep configuration for a  
sweep on the indicated parameter;  
means for performing the sweep on the indicated parameter in accordance with  
the sweep configuration, thereby generating resultant data for the sweep; and  
10 means for storing the resultant data for the sweep.